Third United Nations International Conference on the Peaceful Uses of Atomic Energy

A/CONF.28/A/790
INDIA
February 1964
Original: ENGLISH

Confidential until official release during Conference

Abstract

A DIFFUSION MECHANISM OF RELEASE OF FISSION GASES IN REACTORS

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During the normal operation of the reactors using different types of fuel elements fission gases are released in the coolant in immediate contact with the fuel elements by the mechanism of gas metal diffusion. Experiments carried out for the estimation of the fraction of fission gases released into the coolant in a swimming pool reactor have provided valuable information on the above mechanism.

Measurements of fission gases and their daughter products in the coolant and in the atmospheric air in a swimming pool reactor have established the proposed mechanism of diffusion in which the degree of release of fission gases would depend on the nature and composition of the fuel, its temperature and surface area, the geometry of the fuel element and the coefficient of diffusion. The proposed model can be used for the calculation of release of fission gases in reactors of different types under normal operation.